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Value chain development: Background proposals for the CGIAR Research Program on Livestock and Fish

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Value chain development: Background proposals for the CGIAR Research Program on Livestock and Fish

Strategies for pro-poor, gender-equitable value chains for livestock and fish products

Over the past decade, development practitioners have increasingly shifted their attention from farming systems to targeting agricultural value chains to improve smallholder production and participation in markets (see, for example, Rota and Sperandini 2010). This is because small-scale producers are often unable to increase production by adopting productivity-enhancing technologies unless the value chains for their products are sufficiently developed and dynamic. Accordingly, value chains must provide both 'push' and 'pull' for technology uptake to justify the investment of the various actors along the value chain to increase production and productivity. More emphasis has been given, therefore, to a business orientation to stimulate agricultural production and related services rather than viewing smallholder agriculture simply as a means of survival (Webber and Labaste 2010). The underlying assumption is that increasing the commercial orientation of smallholders and 'growing' the associated value chain to create pro-poor value-addition opportunities will result in sustainable and resilient outcomes and prevent smallholder livestock keepers and fish farmers from being marginalized.

Agricultural research has taken the cue from these trends in the development sector, recognizing that technologies and strategies being generated need to be relevant within such a value chain context if they are to be taken up and achieve impact. This Program adopts this type of value chain perspective; Theme 2, on Value Chain Development, will serve as the mechanism for directly engaging within the selected animal product value chains.

The objectives of Theme 2 will be to:

- Identify technological and institutional opportunities to increase supply of animal products from the target value chains that benefit poor consumers
- Align research and development partners to mobilize resources to transform the target value chains through major development interventions
- Develop strategies for working effectively as knowledge partner to development actors by supporting improved design, gender integration implementation and assessment of interventions that enhance value chain performance, output, and innovation capacity as well as development impacts.

Approach

A large literature already exists offering a variety of conceptual frameworks and a range of methods and tools under the general label of value chain analysis (see Webber and Labaste (2010) for a recent review). Value chain analysis includes a characterization component to describe the structure and relationships within a chain, a diagnostic component to identify opportunities to increase its efficiency and equity, and a prescriptive component for designing, implementing and sequencing interventions. Key features of value chains highlighted by economists include understanding trust and cooperation, governance, market power, innovation and knowledge, and intervention points (Webber and Labaste 2010), but other perspectives of political economy and socio-cultural context and dynamics also require consideration.

The strength of value chain analysis is that it harnesses the energy and innovation of functioning systems involving motivated stakeholders serving well-defined customers. Its limitations are that it tends to be inward focused and at times under-analytical (ignoring consequences outside the chain of proposed change) or over-analytical (dealing with issues that stakeholders and development actors do not recognize as important). Two complementary approaches are therefore needed. The first is through sectoral and policy analysis, to understand the broader context within which the target value chain functions, and its implications for the chain's longer-term viability. Economic and policy analysis tools will be adapted and applied to assess, for example, supply and demand dynamics and the competitiveness of the target value chains relative to alternative value chains and opportunities faced by the actors, as well issues related to political economy. The second approach addresses the challenge of stimulating market-led development when the value chain's innovation capacity is weak. Stimulating development of value chains is a particularly promising area where our understanding of innovation systems can be improved and translated into practical actions to facilitate interactions between actors both within and outside (e.g. researchers) the value chain to co-create solutions. On-going work that will be applied includes Integrated Agricultural Research for Development (IAR4D) in the form of innovation platforms in which researchers facilitate interactions between actors to co-develop innovation capacity for sustained innovation (Tizikara and Kwesiga 2006; van Rooye and Homann-Kee Tui 2009; New Agriculturalist 2010).

Gender inequalities are often critical to understanding and addressing the 'weakest links' within value chains, and the most critical areas for upgrading quality and growth as well as poverty reduction. Gender analysis is, however, generally also the weakest point in most value chain analyses, and largely ignored in most value chain manuals (Mayoux and Mackey 2007). Gender inequalities affect where power is located and where and how change can occur in order to translate chain upgrading into poverty reduction. Gender inequalities are often important in explaining why different parts of the chain are blockages to growth. Gender analysis is needed to explain why particular chains are dominated by men or women, in what circumstances women have been able to become successful at creating employment, and how women can be supported to make a more effective economic contribution.

A gender and equity inclusive process would entail (i) giving women and the poor at all levels a voice in the process (ii) gender disaggregation of all data to identify areas of gender difference (iii) investigating areas of gender difference to identify whether this is due to gender inequalities of opportunity or differences in choice (iv) gender equitable planning which mainstreams equality of opportunity and identifies supportive strategies needed to enable women to realize these opportunities, and to promote the support of men for the necessary changes and (iv) gender accountable implementation and learning which involves women as well as men in implementation, incorporates gender indicators in monitoring and informs women as well as men of learning outcomes.

What are innovation platforms?

Innovation platforms are networks or loose coalitions of individuals and organizations who come together to share experiences, knowledge, skills, resources and ideas with the objective of addressing problems and opportunities of mutual interest in new ways. In a developmental context, the objective would be to achieve beneficial and equitable outcomes which target poor people, including women and other vulnerable groups.

In the example of an innovation platform focused on improved production and marketing of an agricultural commodity, members might include those along that commodity value chain—e.g. individual farmers, farmers' organizations, large-scale producers, women's groups, CBOs, NGOs, FBOs, local government officers, traders, transporters, processors, input and service providers, micro-financiers and insurance agents, retailers and wholesalers, agri-businesses, researchers and journalists amongst others. Innovation platforms evolve with time; members of the platform change as incentives and need for their participation change.

Innovation platforms need to be effectively facilitated. Innovation brokers, who can come from the research or development community, can play this important role. Ideally they ensure effective networking between platform members, act as conduits for knowledge, capacity building and finance, provide conflict resolution services and negotiate deals and alliances, amongst other roles.

Innovation platforms are transitory arrangements. The success of an innovation platform should not be in to different types of entity, such as farmers' organizations, cooperatives, businesses or contracted arrangements. It is, however, desirable that innovation capacity is enhanced and remains available locally so this can be galvanized and targeted to address future needs.

This Program's CG partners have a track record in exploring and applying value chain analysis in pro-poor development of value chains for animal products (Negassa 2009; Rich et al. 2009; Baker et al. 2009). Animal product value chains have particular characteristics that distinguish them from other agricultural products, such as: the asset-related, cash flow and social functions of livestock that often see people accumulate large numbers; product perishability and associated public health risks; the role played by livestock in risk management; the divergent paths of crop and livestock pricing during crises; and seasonality of feed and of demand (Upton 2004; Negassa and Jabbar 2008). Certain livestock species are also associated with marginalized populations, gender-demarcated control and intra-household division of labour. These features present opportunities, but demonstrate the need for devising strategies that may be specific to animal-product value chains encompassing animal source foods, live animals, an array of service and distribution functions, and input supplies such as feed and veterinary care that may come from within or beyond the farm household system.

As a consequence of their nature, measuring productivity and efficiency in animal-product systems presents some unique challenges. The performance of their value chains offers interesting avenues of approach (Rich et al. 2010). A core feature of this Theme is that it will build on experiences to date (e.g. Baker et al. 2009) to continue developing **a methodology platform for tailoring value chain development methods to animal products**, and its application to value chains—often in the informal sector—that benefit the poor. The methodology platform will take the form of a set of common approaches, such as value chain analysis, being continuously adapted and refined through community of practice of the members of the research team and their research and development partners working in this area. The team will work closely with the value chain component under CRP2, drawing from its cross-cutting, generic methodology development and contributing the animal-product perspective and case studies from our experiences in applying the methods.

A second key feature of our approach will be **integrating technology generation and adaptation** under Theme 1 directly into value chain development. While value chain development specialists can help identify particular

constraints and bottlenecks in the target value chain, it requires the expertise and insight of the technical scientists to identify potential technological solutions, while interacting with social scientists to ensure their appropriateness. Both technical and social scientists will also have roles in identifying the organizational conditions and changes required for technology adoption, and this approach specifically addresses anticipated problems with 'top–down delivery of inappropriate technology' as experienced in the past. CG technical scientists will therefore participate in the value chain development team for each site. Their role will be to assess technological constraints, identify and develop potential solutions—whether adapting existing technologies or creating novel ones—and then pilot the solutions through to their scale-up within development interventions. Devising strategies for improving service provision to deliver and support technologies (e.g. breeding schemes) will benefit from interaction between the technical and social scientists. This arrangement will orient the technology generation research agenda to addressing the priority needs of the target value chains, which will largely consist of common key technical problems (e.g. increasing the fodder value of food crops). Participating in the team is also expected to enhance the appreciation and understanding of the scientists developing and combining technologies about the context in which the technology is to be used.

A third principle central to this Theme will be structuring most of our work through **our role as knowledge partner to development actors**. This makes explicit a new approach, not without risks, based on on-going CG experiences in a major dairy development project in East Africa and projects elsewhere (e.g. with Tata Trust in India). It entails initial activity to scope the target value chain, its relevant stakeholders, and potential research and development partners willing to support a major development intervention. The CG team will then work towards aligning the various partners in designing such an intervention and mobilizing the required resources, using evidence generated during its initial scoping study and value chain analysis to inform the process. Several of the target value chains were chosen in part based on demonstrated donor interest; this will minimize the risk of failing to mobilize resources. The CG team and its research partners will seek to participate as knowledge partners for implementation of the intervention, permitting them to be directly involved and providing the 'field laboratory' for implementing value chain development activities as they respond to the needs and demands of the development partners to ensure the success of the intervention (and learn from failures where possible and necessary). This formula also provides an immediate impact pathway for our work as we support the development intervention in achieving its objective of impact on a large number of beneficiaries. To implement this approach, staff responsible for leading the engagement with national and local partners and developing expertise on the target value chain will be posted full-time in-country.

A fourth principle will be the **integration of gender in the value chain approach**. This will entail gender sensitive value chain selection which has already formed the basis for the selection. A gendered analysis of these value chains using some of the existing frameworks, including the Gender Dimensions Framework and the Women Empowerment in Agriculture Framework, and adapt them for use in livestock and fish value chains. This analysis will systematically identify gender issues that may limit the overall effectiveness of the value chain development. The World Bank estimates that women engaged in agricultural value chains would increase their production and incomes by 10% to 20% if they had access to the same knowledge, education and inputs as men do. For value chains to be an effective approach for poverty reduction, these disparities will need to be addressed. We will use different strategies that reduce the disparities in participation and benefits from value chains by women by being sensitive to intra-household relations and resource flows, supporting service providers that increase women's access to essential value chain services, addressing unequal distribution of entitlements, addressing women's time poverty through improved technologies and reducing women's risk aversion. This will require involving women in the whole value chain development process, disaggregating value chain data by gender and designing the value chain programs so that women have the equal opportunities as men to participate and benefit from the value chain interventions.

Theme 2 will therefore consolidate existing capacity within the four CG centres in an interdisciplinary team of value chain development specialist together with technical researchers from Theme 1, specialists from Theme

3, and M&E and gender researchers working under Theme 3, working across the target value chains, and with staff based in-country to coordinate the efforts in the specific target value chain.

Research activities and outputs

Research activities will be structured around 3 principal, but integrated, subcomponents that reflect the three dimensions of the approach described above: sectoral and policy analysis, value chain analysis, and value chain innovation.

Component 2.1. Sectoral and policy analysis

The animal-product value chains targeted by this CGIAR Research Program typically represent only one of several production and marketing systems for the animal product in question, which together represent only one subsector within the larger agricultural sector and national economy. Value chain development efforts cannot ignore this broader context, either in terms of the constraints it may impose on the target value chain or incentives it may create. Moreover, this context extends to the highly policy-relevant impacts that changes in the target value chain may create in other parts of the sector or economy. We therefore apply economic and system modelling techniques to evaluate and monitor the interactions between the value chain and its context, to inform the value chain development interventions. Research questions to be addressed include:

- How competitive is the target value chain *vis-à-vis* others for the same or similar animal products? How do policies currently influence the viability of the value chain and its capacity to deliver pro-poor development?
- How will market react to improved competitiveness of the target value chain?
- What policy interventions will boost competitiveness of the target value chain?
- What will be the implications of improved productivity and increasing production and efficiency within the value chain for factor use and competition for resources? What cross-commodity effects will be created, e.g. crop–livestock interactions, particularly with respect to feeds as crop outputs and draft power and manure as crop inputs?
- What will be the implications on gender roles, participation and benefits by the poor and women with improved productivity, increased production and efficiency of the value chain?
- How is demand for the animal product expected to evolve, and which changes can be expected in livestock and fishery industries and delivery systems? What are the implications for prices and trade opportunities?
- How will macro-economic trends and political economy context be expected to affect the value chain over time?

There will be overlap and synergies with the types of analyses undertaken within Theme 3, with the distinction being that Theme 3 will be looking more at larger-perspective, cross-cutting issues and methods (e.g. which value chains to target), whereas Component 2.1 will concentrate on specific studies to inform strategies and policies for the individual target chain (e.g. how are macro-economic policies affecting the trajectory of the target value chain).

Component 2.2. Value chain assessment

There are a wide range of methods and tools for assessing value chains from a definitional, identification and diagnostic perspective (as reviewed in Webber and Labaste 2010). Tools for gender analysis of value chains have been developed and tested in different types of value chains. Such tools include the Gender Dimensions

Framework—GDF (Development and Training Services 2009), and the Women's Empowerment in Agriculture framework—WEA (Care 2009). These assist practitioners in analysing structure and governance within the value chain to identify potential entry points for upgrading: to add more value, improve equity in distribution of value added, or to improve flexibility or resilience in uncertain environments. The gender analytical tools help in identifying the gender based constraints in value chains and opportunities for women and the poor to participate in these chains. Component 2.2 will build on on-going work to refine and adapt these tools to the specificities of animal product value chains, integrating institutional and technical insights from our collective knowledge base. An example is the data collection tool VAIMS developed by ILRI with partners in southern Africa (Baker et al. 2009). We propose to focus on five areas of research.

The first will develop metrics and modelling approaches, such as system dynamics models, for quantifying and monitoring value chain performance and simulate performance under different intervention scenarios (Rich et al. 2010). The second seeks to quantify productivity gaps and their impacts, similar to the way yield gap analysis has already been used in crop research, but building on existing livestock and fish production models. This would improve our ability to prioritize research and development investment to address productivity constraints and predict potential impact. Third, health risk associated with animal products is a recurrent concern and constraint. We therefore propose to build on some preliminary work to integrate risk analysis tools from epidemiology as part of our value chain analysis toolkit. The community of practice described above would ensure a productive interface with CRP4, specifically in applying the One Health approach within a market context. The fourth area, highlighted by participants during the stakeholder consultation, is risks (e.g. price, transaction) and their influence on value chain actors' investment in productivity-enhancing technologies and institutional arrangements, and how such risk can be managed. The fifth area will focus on the gender-based constraints and opportunities in livestock and fish value chains, building on current work on selected value chains in East Africa. We propose to analyse/model the potential impacts of these gender based constraints and the potential for different gender integration strategies to address these constraints.

Component 2.3. Value chain innovation

Whereas subcomponent 2.2 focuses on 'where' in the value chain to intervene to improve productivity, this subcomponent deals with 'how' to intervene to promote uptake, and capacity to sustain growth of the value chain. Activities will centre on three main topics.

The first topic is co-creation of innovation capacity with value chain stakeholders consistent with the IAR4D approach (Jones 2004; Moriarty et al. 2005), and the necessary process. The CG partners have begun working with innovation platforms as learning alliances of stakeholders from various levels (local to national) and sectors (smallholder, private, public, civil, research). Researchers help establish fora (platforms) where actors and stakeholders meet and are facilitated in a collective analysis of the value chain. Researchers then participate as a knowledge partner, providing information and evidence to stimulate interactions among the stakeholders and value chain actors to co-develop new strategies to pilot and evaluate within the value chain. This mechanism serves to improve access to market information, improve contacts and build trustworthy relations amongst partners, and in doing so establish community capacity to deal with other opportunities and challenges as they emerge. A major contribution will be to develop metrics for evaluating the performance of this approach. A further challenge is consolidating emerging lessons on how to apply business development services to stimulate small-scale agri-business (e.g. creating small-scale feed processing services accessible and affordable to smallholder farmers that provide employment opportunities for women, or certification schemes for milk hawkers in informal raw milk market systems) (ILRI 2006). Strategies are also needed for developing effective public–private partnerships with the local and international commercial sector to provide commercial services appropriately formulated for pro-poor value chains, such as those currently being established to develop forage pulveriser services in EADD (Hartwich and Tola 2007).

The second topic in this component examines organizational strategies to address the lack of economies of scale so prevalent in smallholder systems. Smart design of development interventions can integrate research to test a range of different strategies, such as producer or business groups to allow collective product marketing and input purchase, and schemes for clustering of services such as provision of micro-credit, input provision, technical and market information, and marketing services that support uptake of productivity-enhancing technologies. The role of women and youth in producer and business groups and as service providers will be a critical element under this topic. This will benefit from interaction with CRP2 activities targeting collective action more generally.

The third topic examines different strategies for addressing gender and equity within value chains, such as incentive based schemes for women to engage in value chains, addressing systemic barriers, improving domestic service markets, savings-led asset or capital mobilization amongst others. While some of these strategies are best implemented by development partners, research can play a role in targeting these and evaluating their effectiveness in addressing gender based constraints within value chains.

Fourthly, the proposed approach of working as the knowledge partner in major development interventions raises questions about how research can effectively play such a role. One aspect concerns the ability of research to sharpen the M&E systems used by development partners. Another is the development of methods for responding in real-time to development partners' needs for information, as well as action-research techniques for testing new technologies and institutional strategies within the interventions.

Implementation in target value chains

The value chain development team will consist of a multidisciplinary mix of technical and social (including gender) scientists, some of who will focus on a specific value chain to gain a deep understanding of its specificities, and others who will work across value chains providing a methodological perspective. The CG partners have already been conducting research activities within several of the selected value chains, but have less experience in others. The first task of the team will be to conduct a rapid assessment of the current status of the value chain, including identifying the relevant actors and stakeholders in both the research and development sectors. The team will create a forum for the interested stakeholders to work towards a consensus on research and development priorities for the value chains and begin developing an intervention concept, with the objective of preparing and submitting a development proposal for funding within the first year. The initial research activities undertaken by the team will generate information to inform the stakeholders and preparation of the proposal. The goal will be to align sufficient interest and capacity among stakeholders and research and development partners, and mobilize sufficient resources to undertake a large-scale development intervention that will significantly improve value chain productivity and efficiency involving at least tens of thousands of households.

The Program will seek to participate as the knowledge partner within the development intervention, leveraging development funding for additional capacity to support this role. In the case of the on-going East Africa Dairy Development (EADD) project, this role translates primarily in providing an M&E function to the development actors responsible for implementing the intervention, which will allow the team to evaluate what works and what doesn't, and adjustments needed. After initiation of the development intervention, the Program will complement the knowledge partner role with a parallel program of strategic research to identify, develop, and test pilot technological and institutional strategies to enhance the performance of the intervention and the value chain. The team will leverage its role within the development intervention to feed in research outputs for validation and promotion at the scale of the intervention.

Again, following the example of EADD, we would envisage an initial development intervention phase of 4–6 years to achieve proof-of-concept; during this period the team will provide support to mobilize additional development resources for subsequent scaling out of the intervention to new beneficiaries nationally or regionally. At this point, a decision will be made whether to maintain a focus in the value chain or to pursue an exit strategy to disengage and re-deploy to focus on another value chain elsewhere.

Research theme 2:

Outputs, outcomes and impacts for Research Theme 2

	Outputs	Outcomes	Impacts
2.1 Sectoral and policy analysis	Situation analyses of the selected value chains, including analysis of trends in competitiveness of existing value chains, market analysis, political economy factors Multi-market and sectoral models to assess factor use and distribution of benefits cross-sectoral price dynamics policy scenarios Spatial equilibrium models to guide target locations for investment and trade opportunities Resource trade-off modelling Scenarios for organizing and developing value chains that benefit the poor and women rural producers and urban consumers	Consensus on role of target value chain development within national development strategy Evidence available to policymakers for value chain investment scenarios Better alignment of policies with pro-poor value chain development	Public and private value chain investments yielding higher than average returns Improved competitiveness of the target value chain
2.2 Value chain assessment	Gendered value chain analyses within target value chains identifying technological and institutional entry points for improving productivity and efficiency System dynamics models and metrics for quantifying animal product value chain performance Productivity gaps estimated for target value chains Toolkits for pro-poor and gender integrative animal-product value chain analysis Methods for assessment of animal production gaps and research prioritization	Improved targeting of development interventions to entry points within value chains with highest potential for improving productivity Better targeting and relevance of technology adaptation and generation research and value chain development research Improved capacity to monitor value chain performance Gender-specific value chain interventions are implemented during value chain development	Better performing and equitable value chains Value chain development interventions are more program- and cost-effective

	Outputs	Outcomes	Impacts
2.3 Value chain innovation	Innovation platforms established for co-development by value chain actors and other stakeholders Public–private partnerships created for private-sector provision of services target value chains Micro- and small-scale agri-businesses engaged in improved value addition, efficiency and equity in the target value chains Novel organizational strategies to create economies-of-scale and that effectively engage women and the poor are evaluated and adopted Strategies formulated and tested for research as knowledge partner within major development interventions Business opportunities for	Innovation platform approach adopted by development actors for stimulating value chain innovation Innovation capacity within target value chains strengthened Engagement or creation of small business services, including a significant portion by and for women, improves value chain actor access to inputs and services, supporting intensification Farmer and trader business groups with at least 40% women participation Improved men and women member access to inputs and services, and enhanced market power Improved integration of research in development actions	Target value chains are more resilient and responsive, adapting better to changing market conditions and opportunities Increased market activity and professionalism as value chains become more business oriented Poor value chain actors, including women, invest in and intensify their production and marketing systems Research achieves impact at scale more directly Reduction of gender disparities in participation in value chains and in benefits accrued including income under the control of women

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